The University of Chicago

TRENDS OF AGRICULTURE IN THE CHICAGO REGION

A PART OF A DISSERTATION SUBMITTED TO THE FACULTY OF THE SCHOOL OF BUSINESS IN CANDIDACY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

AUGUST, 1941

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ROBERT H. ENGLE

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PART I

INTRODUCTION

In this study the effort is made to describe and explain the changes in the agriculture near the city of Chicago during approximately the first century of its development. Particular attention is directed to the possible mutual influences on each other of the city and its adjacent agriculture. While the inquiry may be a legitimate concession to the curiosity of the author, his counselors, and a few others, it is hoped that the information thus developed may be of use to city and city-regional planners, and to the students of land use in general. It is a sequel of Duddy's Agriculture in the Chicago Region which is based on 1925 data. Both studies are typical of a series of investigations of Chicago and its environs inspired by the Chicago Regional Planning Association. The unit chosen for study referred to in this study as "Region" spelled with a capital R, is that of the Chicago Regional Planning Association, specifically, the counties of Cook, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry, and Will in Illinois; Lake, LaPorte, and Porter in Indiana; and Kenosha, Racine, and Walworth in Wisconsin.

This area, early in its history, may have exhibited a degree of "regional integrity" conferred by the mutual influences of the city and its nearby agriculture more or less following the von Thünen theory set forth in his "Der Isolirte Staat." But, after the coming of improved transportation including the railroads in the later 1840's, many of its economic boundaries with reference to agriculture were extended far beyond this area. There is, however, some evidence that this Chicago Region may still encompass these mutual influences with respect to fresh

milk and vegetables. In other respects, this aspect of the inquiry has had a rather negative result.

The physical environment accounts for some interesting differences in the agriculture of this Region. The climate is influenced noticeably by the lake and the latitude of the Region. Rainfall, which averages about 32 inches annually, is distributed throughout the seasons very favorably for growing most of the crops. The length of the frost free or growing period averages over 160 days. It varies from less than 150 days in the northwestern corner to over 180 days at the lake. At the Chicago latitude there are 2,286.8 hours of possible sunshine in the growing season 68 per cent of which or 1,555 hours are realized. Warm nights so needed by corn are less frequent in the northern part and near the lake. The 70° F. isotherm which largely delineates the northern boundary of the United States corn belt lies across this Region. Its soils, resulting from the Late Wisconsin Glaciation, are chiefly sands (near the lake) upland timber soils, and dark prairie soils. The topography has no less influence. The timber soil area is rolling requiring livestock for the best use of its land as well as to maintain its fertility. The flat prairies are less insistent on a livestock system of farming for soil fertility maintenance, and they are easily cultivated with modern machinery. If pasture is needed it must find a place in the rotation with other crops. It seldom has a permanent claim to any part of the farm as it does in the rolling areas. The prairie sections of the Region, therefore, have the physical features that permit a cash grain rather than livestock type of farming.

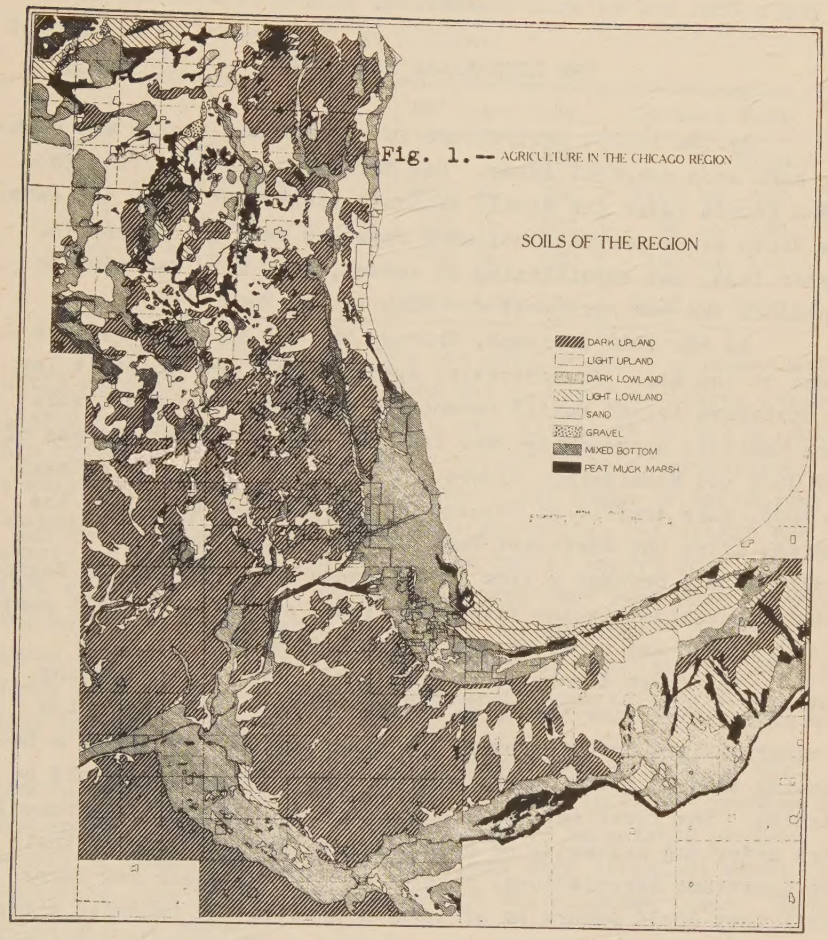

Fig. 1.-- AGRICULTURE IN THE CHICAGO REGION

PART II

THE HISTORICAL BACKGROUND

By the 1830's agriculture in the eastern states was pushing hard upon marginal lands. New England began importing food and a decade later the Middle Atlantic states had to do the same. The South since pre-Revolutionary days had been going west for better land, but specializing in cotton, came more and more to depend on the new northwest for much of its food.

As the 1830's opened, Chicago was not much more than a place on the map. The potential agricultural land about it lay an unclaimed island hardly reached by emigrants who until this time had been approaching over land and via the water courses of the Ohio and Mississippi rivers. The opening of the Erie Canal in 1825, lake traffic to Chicago in the 1830's, removal of the Indians after the Blackhawk War, and the boom enthusiasm of the middle 1830's brought a tide of emigrants into the Chicago Region. Within approximately the first five years of the 1830's all parts of the Region had received their first settlers.

The first twenty years were hard, hopeful, pioneering. The prospective farm had to be located in the wilderness, its boundaries laid out, temporary buildings erected, at least a beginning made at clearing the land so that a first crop could be planted. The first settlers, coming before organized government, were under the necessity of organizing a "pro-tem" one of their own, Squatters Associations, chiefly to protect their new farms until they could secure an officially granted and recorded title.

The favored locations were those near water--for drinking, for power, perhaps even for transportation--near timber for fence and building supplies, and near a market or a way to market. Where timber was not at hand, hedges were grown for fences. Until lumber became available farm buildings were made of logs and were often inadequate for the severe winters of the Chicago area. Very few of these buildings protected from cold and many not even from snow. "Chinks," imperfectly closed in the dwellings, were

left still wider in barns, and storms often blanketed the enclosed cattle with snow.

The cost of making an ordinary farm in the 1830's and 1840's may be summarized[1] as follows:

	160 Acre Farm	80 Acre Farm
Cost of land	$200	$100
Cost of buildings. . .	$200 to 300	$100 to 200
Cost of fencing. . . .	160 to 300	90 to 150
Cost of breaking . . .	240 to 320	120 to 160
Total	$800 to $1,120	$410 to $610

For the first years the new settler was a consumer and until he could raise his own food had to buy from longer established settlers. Before he could sell livestock he had to get his breeding stock and wait till surplus animals accumulated. As a measure of the transition from the first stage of deficiency through that of self sufficiency to production sufficient for export is the story of Chicago which had to import food until 1838 when seventy-eight bushels of wheat were sent east. During the next four years local production was sufficient for local needs and some exports. The first pork was exported in 1841, the first beef in 1843, and after 1844 grain exports were over a million bushels annually.

The nature of agricultural production as late as the 1850's reflects the pioneer situation. The difficult problem of transportation from farm to market limited marketable produce mainly to wheat and meat animals. Hogs were efficient means of marketing corn and cattle made use of the roughage feeds. Both could walk to market.

In 1850, half the Chicago Region was in farms, and a quarter of the land improved. The important products were sheep

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[1] Abner D. Jones, Illinois and the West, 1838 (Boston: Weeks, Jordan and Co., 1838), pp. 160-61; John Mason Peck, Guide for Emigrants (Boston: Lincoln and Edwards, 1831), pp. 182-86; Percy Bidwell and John I. Falconer, History of Agriculture in the Northern United States, 1620-1860 (Washington: The Carnegie Institution of Washington, 1925), pp. 211, 370; Solon Robinson, of Lake County, Indiana, in The Cultivator, X (1843), 37; James W. Norris, Norris' Business Directory and Statistics of the City of Chicago for the year 1845, Fergus Historical Series No. 25, II (Chicago: Fergus Printing Co., 1883), 23.

and wool, cattle and dairy products, hogs, wheat, oats, and hay. There had been some experimenting with miscellaneous crops (such as hops, hemp, and silk cocoons) but by 1860 the agriculture of the Region was fairly well established.

Accompanying the agricultural growth of the Region were technological and economic developments of great importance to the Region's agriculture and the growth of Chicago. First was the improvement of transportation facilities. Chicago's position on the Great Lakes gave it, of course, a permanent advantage over older inland cities which enabled it eventually to surpass them. In 1848 three major transportation events occurred: (1) Plank roads were laid to Chicago. (2) The Illinois Michigan Canal was opened, and (3) Chicago's first railroad began operation, initiating the extensive railway net work radiating from Chicago. Second, in 1848 McCormick moved his reaper works to Chicago and energetically introduced new devices which multiplied the farmers' productive effectiveness. Third, all this enhanced productive power was supported by a strong foreign demand caused by short European crops, the Irish famine, the effect of the repeal of the English Corn Laws in the middle 1840's and the Crimean War which shut off Russian supplies in the middle 1850's.

PART III

THE TRENDS

Land Organization

Land was taken up into farms rapidly until about 1880 and continued at a slower rate until about 1900. This is the general pattern also for most of the agricultural production of the Region. The developing of a new country is the dominating influence at least to 1880. The proportion of farm land "improved" or brought into agricultural use reached 80 per cent about 1870 and has remained at that proportion rather steadily ever since. The Wisconsin counties show the largest proportion "unimproved" but even here only about a quarter of the farm land is of this sort.

The trend for number of farms follows that of land in farms increasing from about 25,000 in 1860 to a peak of 36,000 in 1900.

TABLE 1

FARMS OF THE REGION GROUPED ACCORDING TO SIZES AND RANKS, 1870-1935

Rank	Size (Acres)	Range in Numbers 1870-1935 (Farms)
1	100- 174	10,000-12,000
2	50- 99	5,800- 9,800
3	175- 259	4,600- 5,000
4	20- 49	3,300- 5,900
5	260- 499	2,000- 2,350
6	10- 19[a]	1,250- 2,200
7	3- 9	850- 2,600
8	-3	50- 750
9	500-1,000[b]	150- 375
10	Over 1,000	13- 68

[a]Surpassed by 3-9 acre group in 1935.

[b]Except in 1870 and 1880 when this group surpassed the -3 class.

This is the period of development. There was little change in number of farms until the economic disturbances of the 1920's and 1930's. During agriculture's hard times in the early 1920's, 6,000 farms apparently dropped out of the count, mostly those less than 100 acres in size;[1] during the industrial depression of the 1930's most of this number returned. The 1940 population in "unincorporated" places shows an increase of 2.6 per cent over 1930.

The size of farms in the Chicago Region has been typically the "family size farm." The group including the quarter section farms is the modal size in all counties except the "large" farm counties of LaPorte, Kankakee, Grundy, and Kendall. Although no county has a modal size less than that of the Region as a whole, Cook and Racine have the largest proportion of small farms. Truck farming seems to explain most of this. The trend toward part time farming near cities and along highways has also tended to increase the number of smaller sized farms.

The urban and industrial areas have encroached on farm land to some extent but have reduced the agricultural use of land less than might be expected since much of this expansion has been in naturally non-agricultural sandy areas along the lake shore.

The Crops

Agricultural production in the Chicago Region is of the diversified type. At no time has the whole Region or even half of its crop area been devoted to any one crop. There is a tendency for certain kinds of production to be found in some parts of the Region more than in others such as dairying in the northern part, grain farming for the cash market in the southern part, pork and beef production between these areas in the western part, and truck gardening near the cities and the lake. But in all of these areas there is a liberal mixture of general farm production. Truck gardening farms perhaps exhibit the nearest approach to specialization.

The trend of field crops is easiest seen in the distribution of the crop area among the principal crops: wheat, corn, oats, hay, and other crops except pasture. This shows the great importance of wheat during the Region's youth--even up to the

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[1] An incomplete enumeration in 1925 may also account for some of this.

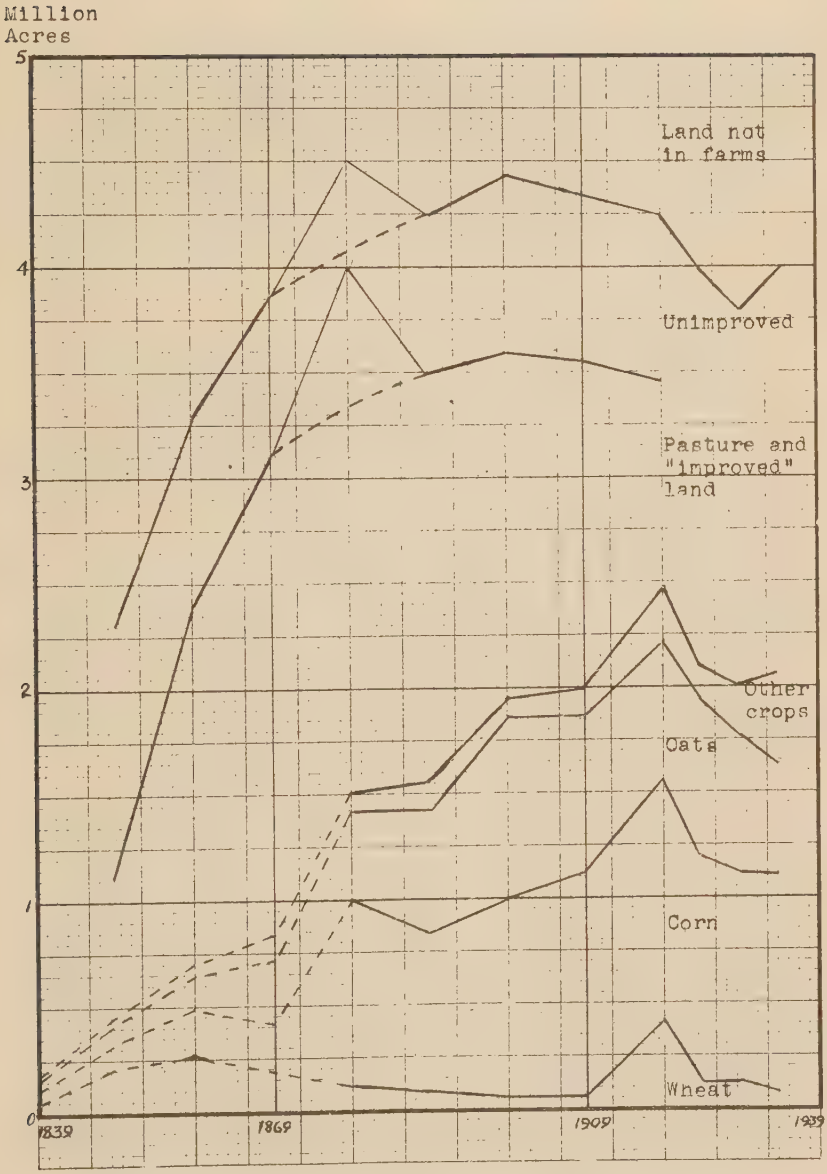

Fig. 2.--Land Use in the Chicago Region, 1839-1934
(Broken lines show estimates)

Civil War. Since 1880, except for a spurt upward during World War I, wheat has been squeezed into relative unimportance by the better paying corn and oats. This is typical of the retreat of wheat from other parts of this near west into the wheat plains west of the Mississippi and Missouri rivers. The Region's grain area seems to have adjusted itself soon after the Civil War to a typical corn-belt economy. Since that time, although wheat still has a place as the small grain in the rotation in the Indiana counties, corn and oats have made up approximately two-thirds of the area in the principal field crops. The other cereal crops--rye, barley, and buckwheat--have always been of minor importance in the Chicago Region.

Of the grain production, that from the southwestern part of the Region has been predominately marketed on the cash grain market. Going north for a short distance one finds more grain fed to hogs and beef cattle. In the northwestern and northern part grain is raised chiefly for dairy cattle ultimately to produce milk for the Chicago market.

With the dwindling population of horses in cities, cash sales of hay are of little importance compared to that fed to farm animals, particularly dairy cattle. Since conservation of soil fertility is a necessary part of wise farm management, a larger proportion of hay and pasture crops has been of the legume variety. These have been produced at an increasing rate since the 1920's.

The most common legume previous to about 1910 has been red clover. Since the 1910 census, however, alfalfa and sweet clover have equaled and often exceeded it in acreage. Where hay is important alfalfa is the highest yielding crop and a particularly nutritious roughage for cattle. Where pasture is wanted or a crop for green manure, sweet clover yields the best. Dairying in the northern part and soil building objectives in the southern part account for the increased proportion of "hays" in legumes. Soy beans, another legume used for either hay or grain is a new crop, increasing by ten fold from less than 20,000 in 1929 to over 200,000 acres in 1934. Under the urgings of the government agricultural agencies legumes are likely to continue increasing.

Fruit never has been important commercially. Other farm enterprises seem to have paid better. Commercial fruit growing may be noticed in a few spots in the eastern part of the Region

on the fringe of the adjoining well known fruit county of Berrien, Michigan.

Vegetable growing although occupying relatively little land is of major importance close to the cities. It seems to persist in spite of sub-dividers. However, motor trucks and concrete highways make this industry less restricted by distances than formerly. Truck farms are now found farther out and ultra-regional production enters the Chicago market more easily. The trend in acreage in vegetables during the 1900's is shown in the following table.

TABLE 2

ACREAGE IN VEGETABLES OF 1,000 ACRES OR MORE
IN COUNTIES OF THE CHICAGO REGION
1899-1934

County	1899	1909	1919	1924	1929	1934
Cook	15,857	17,877	19,275	13,739	20,133	22,260
Racine	1,526	4,492	3,752	4,126	5,211	5,701
Lake, Indiana	1,010	1,643	1,549	1,256	2,217	2,997
Kenosha	...	1,600	2,173	2,562	2,623	2,232
Kankakee	1,231	1,384	...	1,164	2,408	2,944
McHenry	1,309	3,089	...	...	...	...
Walworth	...	1,440	1,234	...	1,875	...
Will	1,238	1,238	...	...	1,441	3,050
LaPorte	1,199	...	...	...	...	1,277
DuPage	...	...	...	...	1,081	1,893
Kane	...	...	...	...	1,183	1,254

Livestock and Livestock Products

Cattle at an early date were widely distributed throughout the Chicago Region. Accounting for this were the strong demand for beef on the Chicago market, the inability of corn, not to mention pasture and hay, to pay a heavy transportation cost and thus enter commercial channels,[1] and the decline in the reliability and profitableness of wheat. They steadily increased in their numbers. The number of all cattle reached 60,588 in 1840, and 161,643 in 1850.[2] In 1860 cattle had increased to ap-

[1]Not until 1847 with a recorded shipment of 67,000 bushels do we have formal statistics of commercial corn at Chicago.

[2]The Chicago Region of this study was not formed as at present constituted until 1853, hence the data for 1840 and 1850 apply to a somewhat different area.

proximately 300,000, and thereafter increases were evident every decade until and including 1900. After 1900 the census data indicate decreases in the total number of cattle in the Region--in 1910 of 13.5 per cent, no change (1 per cent increase) in 1920, and for the decade ending in 1930 17 per cent; and for the thirty years a decrease of about 9 per cent. In 1900 the number was approximately 600,000. This fell to 435,000 in 1930 but increased to 450,000 in 1935 when the cattle cycle for the United States was again at a peak.

Working oxen.--These oxen were never important in the Chicago Region after 1860 when less than 15,000 of them were recorded. Ten years later the number was only 1,507. Thereafter they practically disappeared in the Chicago Region although the census continued "working oxen" as a major classification in the next two censuses and provided for their enumeration as late as 1910.

Beef cattle.--Cattle other than "working oxen" previous to 1900 were classified in the census reports by the ambiguous terms "milch cows" and "other cattle"--an eloquent commentary on

TABLE 3

THE NUMBER OF WORKING OXEN IN THE CHICAGO REGION BY COUNTIES, 1850-1890

	1850	1860	1870	1880	1890
The Region. . .	20,297	14,603	1,507	236	238
Illinois					
Cook.	2,321	1,791	55	8	7
DuPage. . . .	980	475	22	...	3
Grundy. . . .	265	250	2	...	6
Kane.	1,056	775	35	...	...
Kankakee. . .	a	713	7	2	20
Kendall . . .	410	76	4	2	8
Lake.	2,465	1,202	100	8	5
McHenry . . .	2,774	1,475	140	23	32
Will.	1,171	881	23	11	18
Indiana					
Lake.	747	789	185	10	6
LaPorte . . .	1,253	801	238	117	73
Porter. . . .	510	748	151	48	34
Wisconsin .					
Kenosha . . .	1,951	1,257	88	6	...
Racine. . . .	1,554	1,366	191	5	5
Walworth. . .	2,840	2,004	266	6	21

[a]Kankakee County organized in 1853 from Will and Iroquois Counties.

the lack up to this time of specialization in cattle production. The dual purpose of cattle was assumed without analysis. Beef was the primary purpose and milk was more or less of a by-product until this order of importance was reversed by the growth of large cities and their huge demand for milk. In the dairy sections of the Chicago Region this economic change did not begin to be felt until about 1890 nor was the "common red cow" of milking shorthorn type predominantly displaced by Holsteins until after 1900. This is discussed in more detail in the section on dairying.

The data for beef cattle show a trend that increases at a steady or even increasing rate until 1880, decreases in 1890, and very rapidly thereafter until 1910. The 1920 figure shows a small increase but that of 1925 shows the fewest since 1840, and that of 1930 a further decline of almost 40 per cent. The 1935 data are not comparable but at this peak in the national cattle cycle indicate that steers and bulls one year old and older numbered 39,171 in 1935 or 70.6 per cent more than the 22,163 (which were 15 months old or older) in 1930.

Dr. O. E. Baker of the United States Bureau of Agricultural Economics states that:

> The decrease for the United States as a whole has been 28 per cent in the nine years (1920-1929). Clearly it has been a period of widespread liquidation of beef cattle unprecedented in both regional extent and degree. In 1928 there were fewer beef cattle in the United States than at any time since the beginning of the century and possibly, since the early eighties. Proportionate to the number of beef cattle in 1920, the reduction was heaviest in the South which indicates that the poorer beef cattle have been disposed of in a larger degree than the better stock.[1]

Beef production in the Chicago Region has been affected somewhat by the same factors that affect beef production in general, such as: the availability of free or cheap and extensive grazing grounds; the relative supply of feeders and stocker cattle; the relative supply and price of corn; the weather affecting both corn and the supply of stocker cattle; the relative profitableness of hogs as consumers of corn; the trend of beef production in competitive areas such as Argentine; employment conditions which affect the prosperity of the consumers of meat; credit facil-

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[1] A preliminary report issued in October, 1929, of a study of "Regional Changes of Farm Animal Production in Relation to Land Utilization."

ities and terms for feeders at the time of purchasing their stock and perhaps even during the fattening period.[1] But of more importance in the Chicago Region has been the rise of dairy farming. Beginning with 1890 or even 1880 the beef enterprise shows unmistakable displacement by the dairy industry.[2]

The trends of beef production in the various counties and sections of the Region differ but little from that of the Region. Among the differences that may be regarded as significant are these. Although most of the Region's counties have their peaks in 1880, all the western tier of counties together with Kankakee and Lake (Illinois) show continued increase in 1890. The decline from 1890 to 1900 shown by all counties without exception is checked by 1910 in the eight northernmost counties--two of these, McHenry and Kane, both banner dairy counties, have marked increases. Contrary to the general upward trend of the Region during the next decade ending in 1920, the five northern counties register decided decreases in beef cattle. Porter also has a slight decrease, and the increases in Cook, DuPage, and LaPorte are too small to be regarded as significant. The 1925 data show Kenosha, Lake (Illinois), Cook, Kankakee, and to a less extent Kane with increases in beef cattle in contrast to decreases for the other counties. In 1930 there are extensive declines in all but the northern counties which have the fewest beef cattle anyway. McHenry and Walworth are the only counties to show increases in beef cattle.

Therefore, it may be said, that the southwestern or grain section in comparison with the northern part seems to be favoring beef production. The southwestern cash grain section, however, has (1930 census) only about 11 head of beef cattle per 1,000 acres of crop and pasture land compared with about 30 head in the Western Illinois Livestock and Grain type of farming area.

Factors other than nearness to the Chicago market are needed to explain the prevalence of cash grain farming rather than beef cattle or other livestock farming in the southwestern part of the Chicago Region. The Illinois livestock area extends to

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[1]For a brief history of beef production in the United States as it is concerned with the corn belt, see John Able Hopkins, Jr., the first three chapters of Economic History of Beef Production in Iowa (Iowa City: State Historical Society, 1928).

[2]Total cattle shows little change while the dairy cattle portion thereof increases decidedly.

include the southwestern corner of Kane County and the northwestern corner of Kendall County, both in the Chicago Region and nearer Chicago than the cash grain part of the Region. On the other hand, the Illinois Cash Grain area extends to include Douglas and Moultrie counties about 175 miles south of Chicago or about four times as far as the livestock area of the above mentioned corners of Kane and Kendall counties. This will be discussed further in the chapter on types of farming.

To make a generalized summary statement concerning the differences in the trend in beef production in the various parts of the Chicago Region, it may be said that in the early part of the period the northern part, largely coextensive with the dairy section, favored beef cattle most steadily and persistently. This section continued to increase its beef cattle until ten years later than most of the Region but after 1890, except for a slight hesitation in 1910, steadily and decidedly deserted them for dairy cattle. The southern or grain section continue with beef without much change after 1900 until the decline registered in 1930.[1]

In the instance of beef cattle, it is clear that the rise of a metropolitan urban factor changed noticeably the character of its adjacent agriculture. The demand of metropolitan Chicago for dairy products, particularly fresh milk, effectively changed the cattle industry in the northern counties, especially Kane, McHenry, and Walworth from beef to dairy cattle. This is a good example of pushing the natural advantage of location close to the market for milk, while yielding to distant Iowa and western Illinois the production of beef cattle.

Dairy Cattle and Dairy Products

In the first half of the Chicago Region's century of history sufficient milk and dairy products for local needs were produced from cattle kept principally for beef. Little specialization for dairy production was developed. With the growth of cities, especially of Chicago, the demand for milk and its products became so important and so much more difficult to meet that

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[1]These declines, however, should probably be questioned because it is probable that many heifers born in 1929, like steers of the same age, are significant elements of beef population rather than dairy calves as in the dairy counties.

the dairy use of cattle became the one of chief importance in those districts that responded to the demand. As a result, the dairy type of cattle and finally dairy breeds became dominant north and west of Chicago. This change gradually took place during the quarter of a century beginning in the 1890's.

The secular trend of dairying in the Chicago Region was positive, showing a one-third increase each decade until 1890 when "maturity" in numbers seems to have been attained. The next two decades show slight increases which are lost in the next quarter century. The latest data, in harmony with the national cattle cycle, show a sharp drop in 1930, most of which is recovered by 1935.

The series for gallons of milk produced on farms does not begin until 1889 when the secular trend for numbers of dairy cattle (milch cows) has passed its period of early youthful growth. It shows an increase in milk production to 1899, a drop to a lowest point in 1909 (the last year milk in Chicago retailed at the "inviolable" price of 7 cents a quart), then, as does the curve for numbers of dairy cattle, rises past a sag in 1929 to its highest point in 1934.

Both these series measuring the dairy enterprise in the Chicago Region, when analyzed by counties, agree in showing that for many years dairying has been the predominant type of farming in the northern half, while there has been but little of it in the drier[1] southern half, particularly the southwestern corner. Changing absolute production data into ratios per unit area gives a little more accurate expression of the relative intensity of dairying. This gives a series in terms of (1) cows milked per 1,000 acres of farm land, and (2) milk produced per acre of farm land. These two series may be combined into a single one by using their relatives or the percentages which the ratios of each county is of the Region's ratios. These are shown in Table 4.

This specialization of dairying in the northern counties also is strikingly shown in the map[2] visualizing the locations of

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[1] Young and Elliott, "Types of Farming in Indiana," Purdue Bulletin No. 342, p. 27.

[2] Chicago Department of Health Annual Report, 1925, Fig. 114; H. A. Ross, The Marketing of Milk in the Chicago Dairy District, Bulletin No. 269, Illinois Agricultural Experiment Station, p. 472; C. A. Brown, Illinois Bulletin 318, p. 178, "Pure Milk,"

TABLE 4

THE INTENSITY OF DAIRYING IN THE CHICAGO REGION BY COUNTIES
1934

Area	Number of Cows Milked per 1,000 Acres of Farm Land		Number of Gallons of Milk Produced Per Acre of Farm Land		Index of Dairying Intensity
	Ratio	Per Cent of Chicago Region's Ratio C.R. = 100	Ratio	Per Cent of Chicago Region's Ratio C.R. = 100	$\frac{b+d}{2}$
	a	b	c	d	e
Northern Counties					
McHenry	126	175	96	199	187
Walworth. . . .	123	170	86	178	174
Racine.	116	162	82	170	166
Kenosha	118	164	74	155	159
Kane.	92	128	75	155	142
Lake (Ill.) . .	95	131	66	137	134
DuPage.	92	129	58	121	125
Chicago Region. .	72	100	48	100	100
Cook.	71	98	47	97	98
Southern Counties					
Porter.	54	75	32	71	73
Lake (Ind.) . .	52	72	33	69	71
Will.	44	61	22	45	53
LaPorte	39	54	19	40	47
Kankakee. . . .	35	49	20	41	45
Kendall	34	47	18	37	42
Grundy.	30	41	13	28	34

plants inspected by the Chicago health authorities and authorized to ship milk and cream to Chicago. This shows no plants in Kendall or Grundy counties and only a few in the other southern counties. On the other hand, almost all the milk receiving plants are located in the northern half of the Chicago Region. Only a few are beyond the borders of the Chicago Region and these mostly

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Pure Milk Association's Magazine, May, 1939; L. K. Wallace and Paul L. Miller, "Statement Concerning the Chicago Milk Market and the Proposed Agreement and Order," United States Department of Agriculture, June, 1939, p. 40. (Mimeographed.) See also Harry C. Trelogan, "An Economic Analysis of the Chicago Milk Market" (Unpublished Ph.D. dissertation, University of Minnesota, 1938).

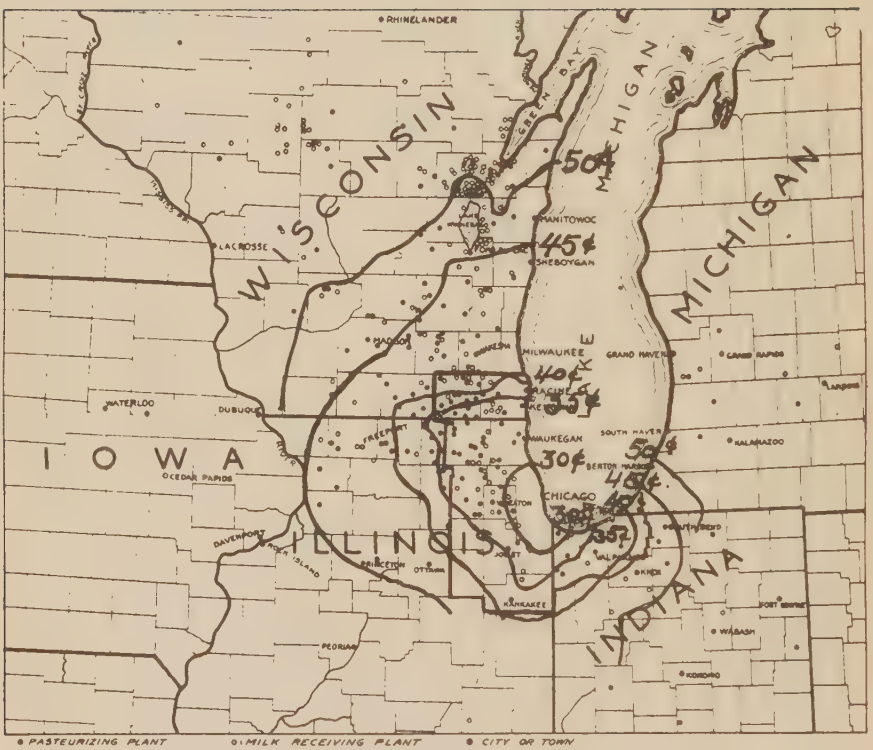

Fig. 21.--The territory supplying Chicago's milk (from 1925 Report of the Chicago Board of Health) with freight rate zones and borders of the Chicago Region indicated.

just west or north, well within 100 miles of Chicago. Only a few cream plants are close enough to be within the Chicago Region, whereas many are beyond it in the heavy milk producing counties of eastern Wisconsin.

The general increase of dairying was not without fluctuations. Though population steadily increased, prices did not keep pace with increased costs. From 1906 to 1910 there were recurrent "shortages" of milk in Chicago. The twenty-year period centering at the time of the 1910 census, when the trend curve for dairy production for the Region begins to flatten and decline, was a very trying one for the dairy industry. Consumers demanded improved quality but resisted increased prices even after war-time inflation had begun. In spite of prosecutions under the anti-trust laws, and price setting by a federal Food Administrator, supplies were shunted to the more attractive creamery and condensery markets and many dairymen shifted to wheat or hog production. Short supplies finally brought more satisfactory prices.

Later prices, however, during the 1920's and 1930's, were not the result of the forces of supply alone. Monopolistic influences in the setting of prices were active from that time. Previous to 1920 the condensery and Chicago fresh milk market prices fluctuated together inversely with supplies. Dairy farmers chaffed at having their prices set by a few large buyers who were seen to sell to consumers at apparently rather large margins. They early sought some of the benefits of monopoly selling by forming co-operative sales agencies. The Pure Milk Association is the most successful of these.

After this Association in 1929 secured "recognition" by the principal dealers as their sole source of supply, it pushed its plan of discriminatory price setting through its "base-surplus" plan. By this plan higher prices were obtained for that proportion of the milk that was sold in the Class I or fresh milk trade, and a lower price for that proportion in excess of Class I requirements that had to go into the less valuable Class II or III channels. The "blended" price to farmers for their milk production was high enough to induce supplies still further in excess of Class I requirements.

Increased proportions paid for at the lower Class II and III prices, however, were not sufficient to control production to "manageable" amounts. The farmers had their eyes on the Class I

price which was thought of as the price of milk. The Pure Milk Association now (end of 1929) closed its lists against new members and went so far as to drop entire locals, whole communities of members. Proscribed dairymen, together with old members dissatisfied with their low bases sought the Class I market without the benefit of PMA.

Prices were cut. Violence broke out. The jargon of the trade was replete with such invidious terms as "distress milk," "bootleg milk," "renegade dealer," "chiseling milk dealer," "outlaw dairymen," "milk trust," "price war," "legitimate" and "illegitimate" trade, market "confusion" and "demoralization,"--indicating that prices somewhere were too high and trade restrained. Finally retail prices broke from the 14 cents a quart that had prevailed for the seven and a half years previous to 1931 to as low as 8 cents a quart in April and May, 1934. This helped the "regular" dealers to recover lost customers. From such evidences of disequilibrium consumers might find reason to argue that retail prices are too high and should be lowered to make Class I prices less attractive.

Other Dairy Products

Dairy products, such as: "cheese made on farms," "butter made on farms," "butterfat sold," and in some districts "cream sold," are of minor importance in the Chicago Region. As previously mentioned of the enumerations of other items of similarly minor importance, their statistics are subject to the suspicion of incompleteness. But they permit, nevertheless, making a few additional generalizations. One is the general decline of farm butter making and its transfer from the farm to factories. Farmers changed from selling butter to selling butterfat in cream or milk. In general, while the north part of the Region is whole milk and cream territory, the southern part shows heavier butter and butterfat production. This is clearly shown in the graphic maps of Duddy's Agriculture in the Chicago Region (in 1925) and the present investigation shows that this has been true in former years also. In the southern part dairying is a side line to grain farming and a by-product of beef or dual purpose cattle.

The farm production of cheese has decreased ever since the beginning of the period when one and one-third million pounds

were recorded for the whole Chicago Region. In 1909 less than 10,000 pounds were made and although there was a slight increase in 1920, cheese production was not considered as important enough to be included in the 1925 census enumerator's schedule. In 1859 Lake County, Illinois, and McHenry County had by far the largest reported production. At the next census, Kane, McHenry, and Lake (Illinois) each report over 100,000 pounds and Kenosha is credited with 308,600 pounds. By 1879 only McHenry and Kenosha produced as much as 100,000 pounds, and by 1889 less than that amount is all that is reported for the entire Region. The cheese business as a farm enterprise in the Chicago Region has almost disappeared in favor of production for the fresh milk market.

In the older cheese sections, New York and Ohio, the change to factory methods may be said to have begun at about the time the Chicago Region was being settled. The first cheese factory was established by 1850, and by 1870 at least two-thirds of America's cheese was made in factories. The first cheese factory in the Chicago Region, in fact the first in Illinois or Wisconsin, was established in 1863 by J. H. Wanzer on his farm near Elgin. Another was started in 1864 at Bloomingdale. But a more important one was that of Gail Borden which he built in 1865 in Elgin. It made 240,000 pounds the first year. McHenry early was an important dairy county. Her first eight cheese factories were started in 1867 and in a season of four to six months used five and one-half million pounds of milk and produced 600,000 pounds of cheese. There were nine other factories in northern Illinois at this time. Kane County also ranking with McHenry County near the top among the milk producing counties of the United States, had, in 1873, 15 cheese factories producing 2,297,500 pounds of cheese. In Wisconsin by 1865 there were 30 factories chiefly in Kenosha and near-by counties. By 1870 there were more than 100 factories in Wisconsin and 46 in Illinois.[1]

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[1]W. D. Hoard, in Northwest Dairymen's Association Report, 1873, p. 66; E. L. Bogart and C. M. Thompson, The Industrial State, Vol. IV, Illinois Centennial History (Springfield, Ill.: Illinois Centennial Commission, 1918), pp. 254-55; Arthur Charles Cole, The Era of the Civil War, 1848-1870 (Springfield, Ill.: Illinois Centennial Commission, 1918), III, 376. Frederick Merk, Economic History of Wisconsin during the Civil War Decade, Wis-

This large amount of cheese did not find a market without a struggle. There was an early prejudice against the new western cheese that arose in the beginning probably from good and sufficient reasons. It was often necessary to change its name or to sell it through intermediate agencies to hide its identity before it could be marketed at "high" prices. To combat this situation the Wisconsin and Illinois dairymen met at Rockford and organized the Northwest Dairymen's Association. They endeavored to improve quality; they contested for and won honors at eastern exhibitions and soon won the ability to sell their product satisfactorily on its own merits. In Wisconsin they organized Boards of Trade to make frequent price quotations and even to prepare for the foreign market. There was notable success in Wisconsin that has persisted until today (1940). In Illinois, however, the cheese dairymen were careless of their reputation. Farmers tried removing some of the cream, manufacturers tried substituting buttermilk, and unduly to hasten curing. Many made filled cheese. Illinois lost its high requtation. When filled cheese became illegal the industry in Illinois almost ceased.

The manufacture of "processed" cheese was begun by J. H. Kraft in 1904. This product, by the second quarter of the twentieth century, had stimulated the whole cheese industry. The makers of this kind of cheese, however, are really centralizers for the processing of the product of other ordinary cheese factories, rather than the original makers of cheese from locally produced milk. The growth of the factory production of cheese explains the decrease after 1870 of the farm production of this commodity, and the competition of the fresh milk market accounts for its practical extinction in the Chicago Region.

Some later developments particularly apropos of the Chicago Region have been the municipal sanitary regulations and the use of the tank car and tank truck for milk transportation. The sanitary regulations of the City of Chicago, after a long process of evolution, are among the strictest of those for large cities. These regulations and their enforcement by adequate inspection affect the individual dairyman and his herd in the country and every step in the handling of the product from the cow to the

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consin Historical Publications, Studies, I (Madison: The Society, 1916), 22; Prairie Farmer, February 1, 22, 1868; Illinois State Agricultural Society Transactions, 1873, p. 81; 1878, p. 269.

consumer. From these sanitary regulations two important effects, among others, have resulted: first, greater consumption of dairy products, particularly milk due to the better quality and greater consumer confidence in the product. Second, they have necessitated greater capital investment properly to handle the milk. This has tended to consolidate much of the distribution of milk under the control of a few large concerns.

Changes in the transportation of milk have had an important influence on dairying in the Chicago Region. For a long time the private family cow was kept within the city.[1] Individual dairy farms delivering by wagon to retail customers or dealers accounted for a large part of the city's milk supply. As early as 1850 or 1852,[2] however, shipment in cans by railroad began when Phineas H. Smith of Elgin shipped milk over the Galena and Chicago Union Railroad to the Adams House. Other hotels followed and soon a large trade with Kane County dairymen developed.

Shipment of can milk by railroad soon grew into and continued as the dominate method of transporting Chicago's milk until near the end of the period covered by this investigation when the shipment of bulk milk in tanks on either railroad cars or motor trucks came into vogue. Browne shows this trend in the comparison[3] in Table 5 (p. 24). In March, 1932, it was estimated, approximately three-quarters of Chicago's milk came in motor or railway car tanks.[4]

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[1] From 1900 to 1920, inclusive, the census requested the number of dairy cows not on farms, many of which were the cows of private families and some dairy cows held in stock yards. The numbers at these enumerations for Cook County and the Chicago Region are as follows:

	1900	1910	1920
The Chicago Region	13,057	9,984	7,359
Cook County. . . .	5,290	3,296	2,405

[2] Russell H. Anderson, "A History of Agriculture in Illinois during the Civil War Period, 1850-1870" (Unpublished Ph.D. thesis, University of Illinois), p. 96.

[3] E. L. Browne, "Transportation of Milk by Motor Truck in the Chicago Dairy District," Public Roads Magazine, United States Department of Agriculture, July, 1925.

[4] The number of farmers shipping in cans was estimated by an official of the Wieland Company at from 2,500 to 3,500 out of a total of 19,000 shippers. Dr. Herman Bundesen, President of the Chicago Board of Health, in a letter, dated August, 1939, says

TABLE 5

MILK DELIVERED DAILY TO CHICAGO

Method of Transportation	Number of 8 Gallon Cans			
	1910		1924	
	Number	Per Cent	Number	Per Cent
Steam.	29,400	94	29,904	68
Electric	600	2	...	..
Wagon.	1,245	4	...	..
Motor truck. . .	...	..	14,090	32
Total. . . .	31,245	100	43,994	100

The outstanding effect of bulk shipment in tanks is the extension of the potential milk shed. Tank cars have a great advantage in tapping the great surplus area. Browne's observation is:

> Transportation rates and the extension of the milk shed supplying Chicago are rather closely related. The phenomenal development of production to the northwest is largely due to the energetic work of certain railroads running through that section in securing and developing fluid milk shipments. While the railroads have tended to push the dairy district out beyond its present limits the motor truck has intensified production within fifty miles of Chicago and this has had a counter effect.

The tank car has made possible the tapping of the cheaper surplus milk areas extending the potential milk shed farther into Wisconsin and western Illinois. This reduces the monopoly advantage formerly enjoyed by the near-by dairy farmers. But the motor truck tanks are tending on the other hand to reinforce the advan-

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he is unable to furnish the statistics on the amounts of milk coming to Chicago by cans, motor truck tanks, and railroad tanks: "However there are approximately 1,300,000 quarts of milk consumed daily in Chicago, one-third of which is shipped direct from the farm to city, the balance being shipped in tank cars and tank trucks." C. A. Brown, in Illinois Bulletin 318, Milk Distribution in Four Illinois Markets, reports figures obtained from the record of the dairy division of the Chicago Health Department showing that on April 1, 1928, 55.5 per cent of the total supply came to Chicago in tank cars, 20.0 per cent came in tank trucks (together 75.5 per cent). The remaining quarter of the supply came 17.0 per cent in cans in enclosed trucks and 7.5 per cent by rail in bottles and cans.

tage of those near-by dairymen in their head start and experience in producing for the Chicago requirements, their advantage in a shorter haul, lower cost to the smaller volume buyers, and less seasonal variation in production.

Swine

Whereas cattle are the most important users of farm roughages, such as hay and pasture, hogs utilize many by-products found on almost every farm and are depended upon to convert our coarse food grains, particularly corn, into more valuable food products. This is sufficient explanation for their wide distribution (on three-fourths of the farms of the United States)--and for the concentration of their commercial production (two-thirds of it) in the corn belt.

The maps of swine and corn production show the distribution of the two industries to be fairly co-extensive but not of equal concentration. Although corn is used largely for hog production, this is not its only use in all the localities where corn is produced. A locality where corn is used less for hog production is particularly noticeable in a strip through the middle of the Corn Belt from the Chicago Region southward through eastern Illinois and western Indiana where the proportion of hogs to corn is obviously not as great as is characteristic of most of the remainder of the Corn Belt. This is the well-known cash grain area of eastern Illinois.

In the Chicago Region similar maps show similar distributions, and local differences in the proportion of hogs to corn. Nearly all parts of the Region grow corn, but the distribution of hog production while as extensive as that of corn is not nearly as evenly concentrated. The southern portion is a part of the cash grain area mentioned above. The northern is part of the dairy region of the Chicago Milk Shed where corn is used largely for silage and for feeding to dairy cows. A corner of the concentrated "hog belt" coincident with Corn Belt pushes across into the Chicago Region just west of Aurora in southern Kane and northern Kendall Counties.

The major stages of development are fairly well illustrated in the census data. In the Region taken as a whole there was a rapid increase in hogs until 1880 of over 350 per cent, or

an annual average of nearly 18 per cent since 1860. All parts show the rapid increase until 1880 that the Region as a whole does, indicating that until this date the industry was expanding naturally and somewhat uniformly.[1] Since 1900 the general trend in all counties has been downward except in 1920 when only McHenry and the Wisconsin counties continued their marked decline, Cook, DuPage, Grundy, and Kankakee registered marked increases, and the rest changed but little except to decrease at the end of the period.

The trend of the swine industry in the Chicago Region is not very different from that in most other parts of the country except the northwestern corn belt. Baker and others[2] shows most of the country outside the northwestern corn belt as stationary or declining in hog production. In the northwest, corn production has been increased and with it hog production. The farther parts of the corn belt seem to be best suited to take care of the changes in hog production required by the increase in population and to the changing volume of corn production due to variations in yields.

Sheep and Wool

At the time of the beginning of the settlement of the Chicago Region, the sheep industry of the United States after going through several cycles of prosperity and depression, was just emerging from a shifting period into one of fairly fundamental stability. The whole woolen industry as a specialized industrial enterprise became fairly well established in the United States by 1825-30 and the household manufacture of woolens virtually disappeared by 1860.[3]

During the 1840's the great sheep migrations in the shift of the industry from the east to the mid-west took place. In this decade, the sheep population of the Chicago Region increased

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[1]The only decrease is that of Porter County in 1870, which was recovered by 1880.

[2]O. E. Baker, Regional Changes of Farm Animal Production in Relation to Land Utilization. United States Department of Agriculture, Bureau of Agricultural Economics, Hog Outlook Charts with Explanation, July, 1929.

[3]Chester Whitney Wright, Wool Growing and the Tariff (Boston:Houghton Mifflin Co., 1910), pp. 57, 112.

thirteen to fourteen fold. In the 1850's, railroads made agricultural products, other than wool, more available to eastern and export markets which now were becoming more important, with the result that wool growing lost much of its former advantage. In this decade there was not much change in the total sheep population of this Region, but the older southern part decreased its numbers and the newer northern part increased them. This was the situation at the beginning of the period of this study when the Civil War ushered in influences resulting in marked increases which, in every county of the Region, were still evident in the census of 1870.

The census of 1870 showed an increase of 233-1/3 per cent over 1860 although the reaction from the war boom had set in about 1866 or 1867. The 1870 figure was almost retained in 1880, but thereafter declines were general and rapid until the end of the period except for an upturn in 1925 (due almost solely to lambs in feeding yards in Kane County)[1] that was eliminated again in 1930.

Poultry

The trend curves for chickens and dozens of eggs produced, slope at a decidedly positive angle, that for chickens very evenly. During the period, 1880-1925, there is an increase in chickens or 118 per cent or an average of over 25 per cent a decade. In 1930, however, chickens in all counties decreased, except in Kendall where they increased by three thousand. The net reduction of the Region's total is about 17 per cent. Because of the lack of homogeneity in the data for chickens, egg production is probably a better index of the growth of the poultry industry. The three contiguous counties of Grundy, Will, and Lake (Indiana) seem to have had the steadiest increases in egg production. The Region's production increased very rapidly by 123 per cent in the twenty years after 1879, but by only 11-1/2 per cent during the next twenty years. The 1924 and 1929 data show again more rapid

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[1] Kane County had an increase in 1925 over 1920 of almost 700 per cent--2/3 greater in absolute numbers than that of the Chicago Region as a whole. Omitting Kane County the Region lost 24,114 but Kane County gained 62,076, making a net gain in the Region of 37,962. Grundy and Lake (Illinois) also gained in the quintennium, 407 and 380, respectively.

increases, 23 per cent in the decade, reflecting the relatively more favorable position of egg production. Nationally, poultry numbers were stationary or declining between 1930 and 1935;[1] in the Chicago Region the 1935 census reported a decline for the five years of apparently 10 per cent.

Draft Animals

The draft animals of the Chicago Region are predominantly horses and a few mules. In the early days there were a large proportion of working oxen. The data show the trends for horses, mules, and oxen to be as follows.

The trend in the number of horses was very rapidly upward until 1870, a little less rapidly upward from 1870 to 1890. For the next two decades there was no significant change but a slight actual increase until 1910. Since 1910 there has been a noticeable decline which, since 1920 in every county of the Region has been very rapid--over 20 per cent for the Region as a whole by 1925, and almost 25 per cent by 1930. Decreases then stopped, for 1935 showed no change from 1930. The trends of the various counties differ but little from that of the Region.[2] The chief exceptions are in the times the peaks occur. DuPage County seems to reach a peak early, in 1890; Cook, Will, and McHenry in 1900; and Kankakee although coming to a peak in 1910 the same as the Region as a whole, its increases from 1890 and from 1900 are relatively much greater than are the increases for the Region.

Types of Farming

In the course of the first century of agriculture in the Chicago Region there emerged a number of distinguishable types of farming. At first the Region's agriculture was principally the production of wheat, and livestock which could walk to market. Gradually there evolved three kinds of farming typical of various parts of the Region. These are:

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[1] The Agricultural Outlook, Report of United States Department of Agriculture for 1935, p. 81; for 1936, p. 85.

[2] The deviation is so slight that the dividing of the trend curves into the three groups adopted throughout this study, results in the curves making very few changes in their relative order throughout the period--only two after 1870 and none after 1880.

1. Cash grain
   (a) Eastern--corn, wheat, clover
   (b) Western--corn, oats, clover
2. Livestock
   (a) Dairying
   (b) Hogs and beef cattle
3. Intensive use of land
   (a) Olericulture--vegetable and truck
   (b) Floriculture--flowers and greenhouse production
   (c) Other horticulture--fruits
   (d) Part time farming

Two principal factors account for this development: (1) the Chicago market and (2) the physical environment. It should not be said that one is more important than the other for no agriculture can exist without suitable soil and climate, and on the other hand only a market demand can call even suitable soils and climate into production beyond mere subsistence levels. Chicago's local consumption has been most conspicuous in the case of dairying and truck farming while the physical environment seems the more apparent in explaining the development of types of agriculture producing grain and meat.

These are differences in climate, soils, and topography. The 70° F. isotherm, roughly identifying the northern border of the United States corn belt, lies across the Chicago Region. In the area south of this 70°F. isotherm the climate is warm enough and the soils are rich and level enough to grow corn for the cash market. In the area north of it the climate is a little too cool for corn solely as a grain crop but is excellent for small grains, pastures, forage crops, and dairying.

The distribution of the livestock and cash grain types of farming are shown by the grain-land ratios and the livestock-land ratios shown in the next table.

These data show that the counties with least livestock per unit of farm land ship out the most grain per unit area. Will, Grundy, Kankakee and Kendall, all in the southwestern corner of the Region are the most important grain shipping counties, and least important livestock counties while the northern counties have the most livestock per acre of farm land and ship out the least grain.

Dairying as a type of farming grew along with the increase

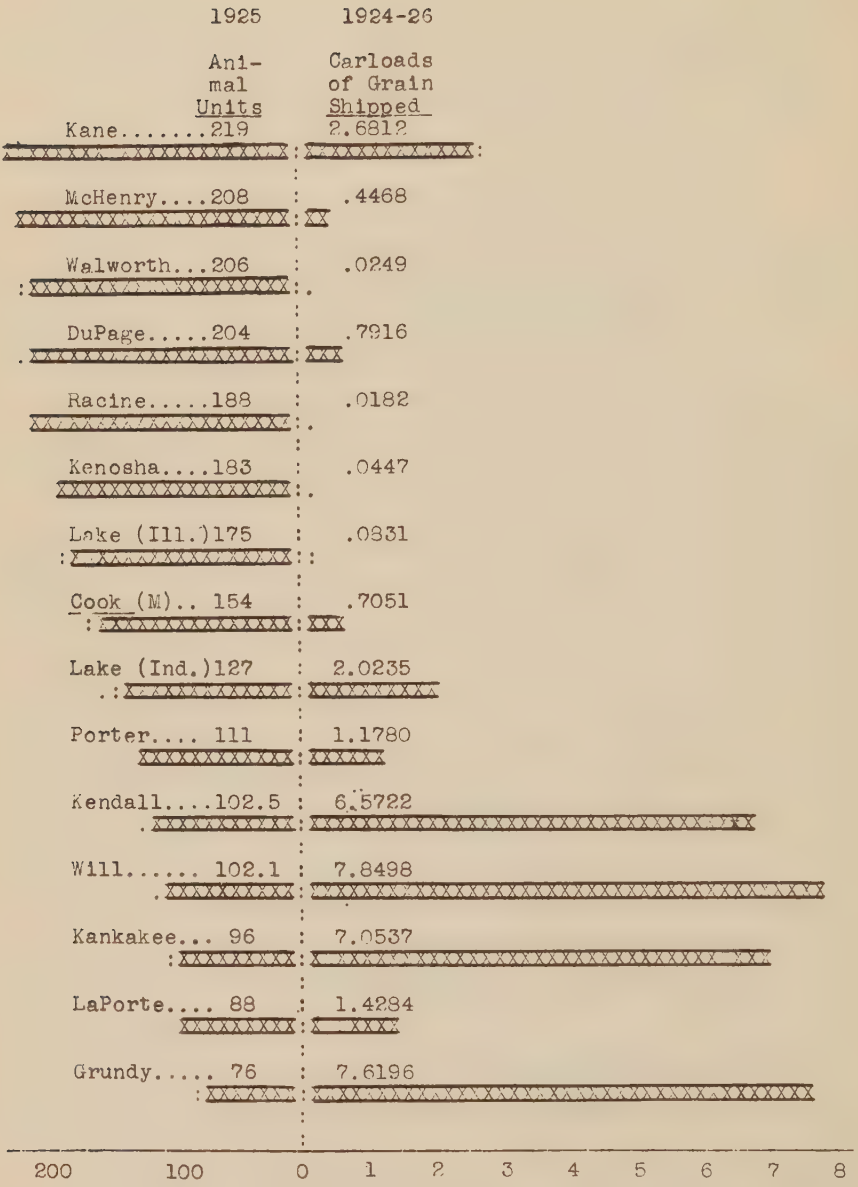

Fig. 4.---Intensity of livestock and grain farming by counties in The Chicago Region.

of urban population which demanded large quantities of fresh milk daily. Up until 1890 the increases in milk were supplied by increases in numbers of milk cows. After 1890 increases were more largely from better cows than more of them. About this time began the shift from the common red cow to the specialized dairy breeds.

Dairying developed in the area north and northwest of Chicago because of favoring topography, soils, and climate. The rough nature of the land and the light timber soils could not sustain a long continued cash grain farming. The cooler climate produces excellent pastures and while corn for grain alone is less favored, it yields well when used for fodder and silage. The railroads in these areas encouraged milk shippers along their lines. The Swiss and "cow-milking Yankees who settled in the northern counties were well adapted to dairying and developed it there.

Truck gardening is a type of farming which also developed along with the growth in Chicago's population. Because of its intensiveness it must have access to a plentiful casual labor market. The bulkiness and perishability of its produce have held it close to the cities of the Region particularly in the days of horse transportation. With the coming of motor trucks and concrete highways and the encroachment of subdividers into former garden areas, locations farther out have become more common. These have also brought produce, more or less competitive, from intermediate areas. Long distance refrigerator fast freight has also brought supplies from the far Pacific and Gulf sources. But these supplies have tended to supplement and extend the season rather than to compete with local produce.

Two other types of farming in the Chicago Region may be noted. These are types of rural living in which agriculture is incidental to other interests. One of these is the "country estates" of wealthy people where farming is done as a hobby rather than as a commercial enterprise. For years there have been many of these country estates in Lake County. More recently (since the War of 1917) in the northern part of Cook County in the vicinity of Barrington there has been a change to this type of "farming." It has grown so extensive that it has almost come to be the dominate type of agriculture there. In DuPage, McHenry, and Kane also there are important numbers of these farms.

The other type of farming, although not as yet as conspicuous as the showy country estates, gives promise of greater economic significance. This is known as "part time" farming. These part time farmers use their farms for a home and also as a source of much of their food, a sort of a "one foot in the country" plan of living, while an important if not the chief source of their income is an employment or a business off the farm. Farms of this kind in the Chicago Region are occasionally noticeable to one traveling about the outskirts of the cities. In the northern third of the Indiana counties these may become the dominant type of residents.

Objective data to measure the development of this type of agriculture are, as yet, rather meagre. The 1930 census reported a count of 1,357 farms (4.6 per cent of the total) in the Chicago Region, the operators of which worked off their farms at least 150 days or enough to earn $750 during 1929. In 1934 there were 2,300 farm operators (7 per cent of the total number) who worked off the farm 150 days or more. This shows an increase of 14.4 per cent without including any (probably not many) who may have earned as much as $750 for off farm work of less than 150 days. In addition to these, there were 3,910 more who worked less than 150 days off the farm or a total of 6,210, 18.87 per cent of all farm operators.[1] Of these the principal off farm occupation of 850 was agricultural while that of 4,710 was non-agricultural. Evidently three-fourths of the part time farm operators in 1934 had an urban or industrial occupation. This part time type of farming may develop into significant proportions near suitable transportation facilities in the outskirts of Chicago Region cities.

The trends of agriculture in the Chicago Region after the pioneering and formative period, show understandable conformation to a few more or less distinguishable types of agriculture and yet have never ceased to respond to changing economic conditions.

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[1]These data, it will be noticed, are in terms of "farm operators." Other workers who may have been members of the farm operator's household are not reported.